Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Withdrawn) A microdispersion treatment device for treating materials comprising:

at least one emitter coupled to at least one power supply for producing an energetic emission;

an exposure region designed to allow the emission to pass therethrough; and

a droplet formation device designed to deliver a microdispersion of droplets of a liquid solution of material to the exposure region such that the droplets pass through the exposure region and the material is substantially non-destructively exposed to the energetic emission.

2. (Withdrawn) A microdispersion treatment device as described in claim 1, wherein the droplet formation device comprises at least one needle.

3. (Withdrawn) A microdispersion treatment device as described in claim 2, wherein the needle has a gauge between about 14 and 30.

4. (Withdrawn) A microdispersion treatment device as described in claim 1, wherein the droplets are less than about 3 mm in diameter.

5. (Withdrawn) A microdispersion treatment device as described in claim 1, further comprising at least one gas nozzle arranged within the exposure region and designed to produce a flow of gas along the walls of the exposure region such that droplets are urged away from the walls of the exposure region by the gas flow.

6. (Withdrawn) A microdispersion treatment device as described in claim 5, wherein the gas is a chemically inert gas.

7. (Withdrawn) A microdispersion treatment device as described in claim 5, wherein the gas is selected from the group consisting of: a noble gas and nitrogen.

8. (Withdrawn) A microdispersion treatment device as described in claim 1, further comprising a flow controller arranged within the exposure region and designed such that the residence time of the droplets in the exposure region can be controlled.

9. (Withdrawn) A microdispersion treatment device as described in claim 8, wherein the flow controller is gas nozzle design to direct a flow of gas at the droplets such that the residence time of the droplets depends on the speed of the flow of gas.

10. (Withdrawn) A microdispersion treatment device as described in claim 9, wherein the gas nozzle is designed to increase the residence time of the droplets.

11. (Withdrawn) A microdispersion treatment device as described in claim 9, wherein the gas nozzle is designed to decrease the residence time of the droplets.

12. (Withdrawn) A microdispersion treatment device as described in claim 9, wherein the gas is a chemically inert gas.

13. (Withdrawn) A microdispersion treatment device as described in claim 9, wherein the gas is selected from the group consisting of: a noble gas and nitrogen.

14. (Withdrawn) A microdispersion treatment device as described in claim 8, wherein the flow controller is a pair of charged plates designed to create a charged field within the exposure region such that the residence time of the droplets within the exposure region depends on the properties of the charged field.

15. (Withdrawn) A microdispersion treatment device as described in claim 14, wherein the charged plates are designed to increase the residence time of the droplets.

16. (Withdrawn) A microdispersion treatment device as described in claim 14, wherein the charged plates are designed to decrease the residence time of the droplets.

17. (Withdrawn) A microdispersion treatment device as described in claim 1, wherein the at least one emitter is at least one flash lamp.

18. (Withdrawn) A microdispersion treatment device as described in claim 17, wherein the at least one flashlamp is designed to emit a pulse of broad-spectrum light.

19. (Withdrawn) A microdispersion treatment device as described in claim 17, wherein the at least one flashlamp emits an emission having wavelengths in the visible and ultraviolet spectrum.

20. (Withdrawn) A microdispersion treatment device as described in claim 17, wherein the at least one flashlamp emits an emission having a spectrum including wavelengths of at least about 170 to about 2,600nm.

21. (Withdrawn) A microdispersion treatment device as described in claim 17, wherein the at least one flashlamp emits emission pulses of duration between about 0.001 and about 100ms.

22. (Withdrawn) A microdispersion treatment device as described in claim 17, wherein the at least one flashlamp emits an emission having an intensity between about 0.01 and about $50J/cm^2$.

23. (Withdrawn) A microdispersion treatment device as described in claim 17, comprising at least two flashlamps.

24. (Withdrawn) A microdispersion treatment device as described in claim 23, wherein the at least two flashlamps emit sequentially.

25. (Withdrawn) A microdispersion treatment device as described in claim 23, wherein the at least two flashlamps emit simultaneously.

26. (Withdrawn) A microdispersion treatment device as described in claim 1, wherein the emitter is a gamma ray emitter.

27. (Withdrawn) A microdispersion treatment device as described in claim 1, further comprising a collection chamber positioned at the outlet of the exposure region to collect the droplets.

28. (Withdrawn) A microdispersion treatment device as described in claim 27, wherein the surface of the collection chamber has a low surface energy coating.

29. (Withdrawn) A microdispersion treatment device as described in claim 28, wherein the low surface energy coating is selected from the group consisting of: Teflon, polycarbonate and polypropylene.

30. (Withdrawn) A microdispersion treatment device as described in either claim 5 or 9, further comprising a flow gas filter arranged and designed to remove the gas flow from the exposure region.

31. (Withdrawn) A microdispersion treatment device as described in claim 1, further comprising a temperature controller arranged to maintain a constant temperature within the exposure region.

32. (Withdrawn) A microdispersion treatment device as described in claim 1, wherein the material is selected from the group consisting of: proteins, and pharmaceuticals.

33. (Withdrawn) A microdispersion treatment device as described in claim 1, wherein the droplet formation device is designed to produce a microdispersion of substantially uniform droplets.

34. (Withdrawn) A microdispersion treatment device as described in claim 1, wherein the droplet formation device is designed to produce a microdispersion of substantially uniform droplets at a substantially uniform rate.

35. (Withdrawn) A microdispersion treatment device for treating materials comprising:

at least one emitter coupled to at least one power supply for producing an energetic emission; and

a treatment chamber defining an internal volume having an exposure region designed to allow the emission to pass therethrough, the treatment chamber further comprising an inlet in fluid communication with a reservoir of a liquid solution of material arranged on a first side of the exposure region designed to emit a microdispersion of droplets of the material and an outlet arranged on a second side of the exposure region designed to collect the droplets, such that the droplets pass through the exposure region and such that the material is substantially non-destructively exposed to the energetic emission.

36. (Withdrawn) A microdispersion treatment device for treating materials comprising:

at least one emitter coupled to at least one power supply for producing an energetic emission;

a treatment chamber defining an internal volume having an exposure region designed to allow the emission to pass therethrough, the treatment chamber further comprising an inlet in fluid communication with a reservoir of a liquid solution of material arranged on a first side of the exposure region designed to emit a microdispersion of droplets of the material and an outlet arranged on a second side of the exposure region designed to collect the droplets, such that the droplets pass through the exposure region and such that the material is substantially non-destructively exposed to the energetic emission;

a flow controller arranged within the treatment chamber and designed such that the residence time of the droplets in the treatment chamber can be controlled; and

at least one gas nozzle arranged within the internal volume designed to produce a flow of gas along the walls of the treatment chamber such that droplets are urged away from the walls of the treatment chamber by the gas flow.

37. (Currently Amended) A method of treating a material comprising:

providing a source of energetic emission;

providing a liquid solution of material;

separating the solution of material into droplets;

passing said droplets through an enclosed exposure region at a controlled rate such that ~~and exposing~~ the droplets are

substantially non-destructively exposed to the energetic emission, while simultaneously urging said droplets away from the walls of the enclosed exposure region.

38. (Currently Amended). A method of treating a liquid material comprising running a solution of the material through ~~the~~ a microdispersion treatment device comprising: ~~as described in claim 1~~

at least one emitter coupled to at least one power supply for producing an energetic emission;

an exposure region designed to allow the emission to pass therethrough; and

a droplet formation device designed to deliver a microdispersion of droplets of a liquid solution of material to the exposure region such that the droplets pass through the exposure region and the material is substantially non-destructively exposed to the energetic emission; and

at least one gas nozzle arranged within the exposure region and designed to produce a flow of gas along the walls of the exposure region such that droplets are urged away from the walls of the exposure region by the gas flow.

39. (New) The method as described in claim 38, wherein the droplet formation device comprises at least one needle.

40. (New) The method as described in claim 39, wherein the needle has a gauge between about 14 and 30.

41. (New) The method as described in claim 38, wherein the droplets are less than about 3 mm in diameter.

42. (New) The method as described in claim 38, further comprising.

43. (New) The method as described in claim 42, wherein the gas is a chemically inert gas.

44. (New) The method in claim 42, wherein the gas is selected from the group consisting of a noble gas and nitrogen.

45. (New) The method as described in claim 38, further comprising a flow controller arranged within the exposure region and designed such that the residence time of the droplets in the exposure region can be controlled.

46. (New) The method as described in claim 45, wherein the flow controller is at least one gas nozzle designed to direct a flow of gas at the droplets such that the residence time of the droplets depends on the speed of the flow of gas.

47. (New) The method as described in claim 46, wherein the at least one gas nozzle is designed to increase the residence time of the droplets.

48. (New) The method as described in claim 46, wherein the at least one gas nozzle is designed to decrease the residence time of the droplets.

49. (New) The method as described in claim 46, wherein the gas is a chemically inert gas.

50. (New) The method as described in claim 46, wherein the gas is selected from the group consisting of a noble gas and nitrogen.

51. (New) The method as described in claim 45, wherein the flow controller is at least one a pair of charged plates designed to create a charged field within the exposure region such that the residence time of the droplets within the exposure region depends on the properties of the charged field.

52. (New) The method as described in claim 51, wherein the charged plates are designed to increase the residence time of the droplets.

53. (New) The method as described in claim 51, wherein the charged plates are designed to decrease the residence time of the droplets.

54. (New) The method as described in claim 38, wherein the at least one emitter is at least one flash lamp.

55. (New) The method as described in claim 54, wherein the at least one flashlamp is designed to emit a pulse of broad-spectrum light.

56. (New) The method as described in claim 54, wherein the at least one flashlamp emits an emission having wavelengths in the visible and ultraviolet spectrum.

57. (New) The method as described in claim 54, wherein the at least one flashlamp emits an emission having a spectrum including wavelengths of at least about 170 to about 2,600nm.

58. (New) The method as described in claim 54, wherein the at least one flashlamp emits emission pulses of duration between about 0.001 and about 100ms.

59. (New) The method as described in claim 54, wherein the at least one flashlamp emits an emission having an intensity between about 0.01 and about 50J/cm2.

60. (New) The method as described in claim 54, wherein the at least one emitter comprises at least two flashlamps.

61. (New) The method as described in claim 60, wherein the at least two flashlamps emit sequentially.

62. (New) The method as described in claim 60, wherein the at least two flashlamps emit simultaneously.

63. (New) The method as described in claim 38, wherein the emitter is a gamma ray emitter.

64. (New) The method as described in claim 38, wherein the microdispersion treatment device further comprises a collection chamber positioned at the outlet of the exposure region to collect the droplets.

65. (New) The method as described in claim 64, wherein the surface of the collection chamber has a low surface energy coating.

66. (New) The method as described in claim 65, wherein the low surface energy coating is selected from the group consisting of Teflon, polycarbonate and polypropylene.

67. (New) The method as described in claim 38, further comprising a flow gas filter arranged and designed to remove the gas flow from the exposure region.

68. (New) The method as described in claim 38, further comprising a temperature controller arranged to maintain a constant temperature within the exposure region.

69. (New) The method as described in claim 38, wherein the material is selected from the group consisting of proteins, and pharmaceuticals.

70. (New) The method as described in claim 38, wherein the droplet formation device is designed to produce a microdispersion of substantially uniform droplets.

71. (New) The method as described in claim 38, wherein the droplet formation device is designed to produce a microdispersion of substantially uniform droplets at a substantially uniform rate.